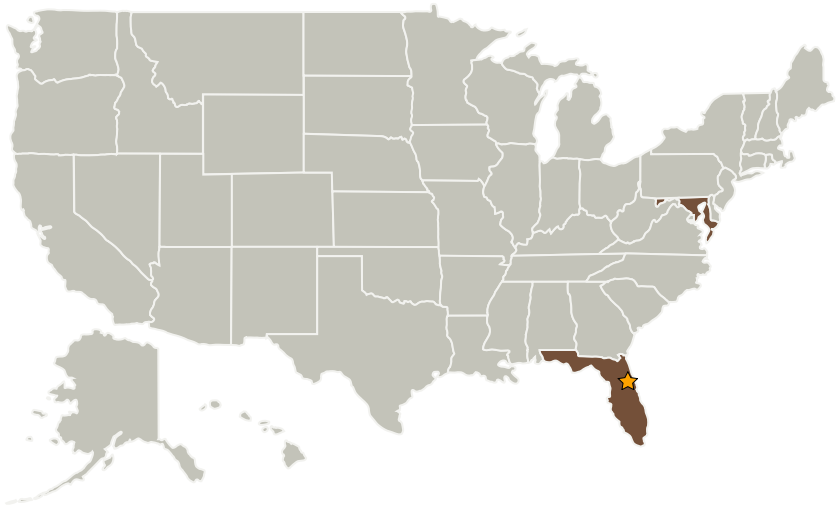
Adaptive Magnetorheological Isolator for Ground Support Equipment, Phase II

Completed Technology Project (2009 - 2011)

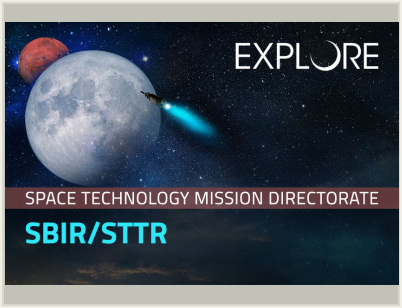
Project Introduction

The minimization of vibration-induced damage has become a critical issue for rocket launch ground support electronics (GSE). In particular, the effect of high acoustic and exhaust blast loading during launch results in large amplitude motions of the support structures, which can transmit damaging loads to the GSE. This results in the need for extensive check out and frequent repairs of GSE systems after each launch, as well as extensive design and qualification testing to ensure the survivability of this equipment. To this end, Techno-Sciences Inc. (TSi), in collaboration with the University of Maryland (UMD) and LORD Corporation, has developed an innovative Adaptive Magnetorheological Isolator (AMI) system for GSE. The AMI system utilizes the continuously adjustable energy absorption capabilities of magnetorheological (MR) fluid dampers to automatically adjust to real-time environmental measurements as well as GSE rack properties. Because of its adaptability and optimal vibration isolation capabilities, the AMI system significantly reduces design and life-cycle costs as well as enhances equipment reliability.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Kennedy Space Center(KSC)	Lead Organization	NASA Center	Kennedy Space Center, Florida
Techno-Sciences, Inc.	Supporting Organization	Industry	Beltsville, Maryland



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Kennedy Space Center (KSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
Florida	Maryland

Project Transitions

June 2009: Project Start

September 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX13 Ground, Test, and Surface Systems
  - TX13.1 Infrastructure Optimization
    - TX13.1.1 Natural and Induced Environment Characterization and Mitigation